



WEST SANTA ANA BRANCH

Initial Screening Results

November 2010

www.pacificelectriccorridor.com



SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

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Meeting Purpose

Why are we here today?

- Inform you about the alternatives we've been evaluating since our last meeting
- Hear your thoughts and ideas about:
 - Which alternatives to study further





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Public Participation Program





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Overview of Presentation

Starting Initial Screening Discussion with Overview of:

- Purpose and Need Findings
- Description of Initial Set of Alternatives
- Initial Screening Results

Decision on Final Set of Alternatives: January 2011





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Why This Corridor?

- Large share of regional population and employment
- Existing and future high population and employment densities
- Corridor highway system operates at-capacity and beyond
- Corridor residents are isolated and have limited travel options
- Significant transit dependent population





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Transportation System Challenges

From a transportation system perspective:

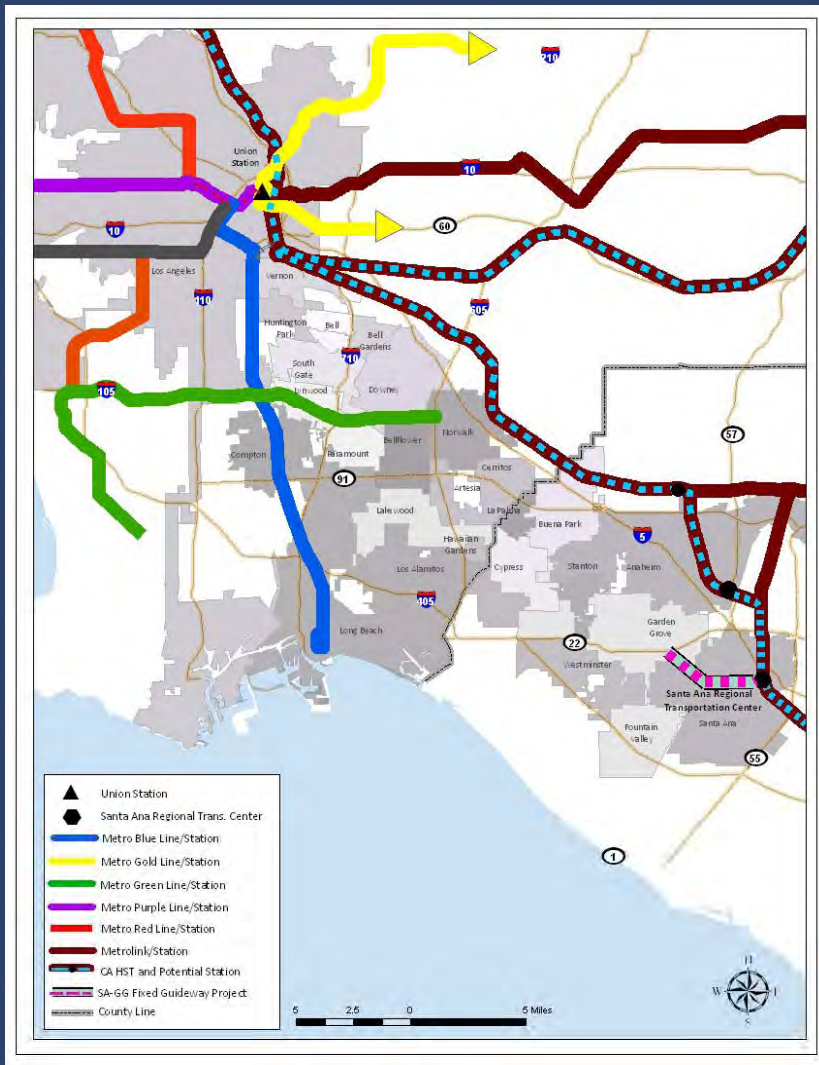
- Corridor highway system operates at-capacity and beyond today and in the future
- Corridor residents lack connections to the regional transit system and have few travel options
- Corridor transit system operates at-capacity and beyond in some areas
- Corridor contains a significant low income/transit dependent population





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Potential Corridor System





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Alternatives Considered



No Build Alternative



TSM Alternative



Bus Rapid Transit (BRT)



Street Car (STCR)



Light Rail Transit (LRT)



Diesel Multiple Unit (DMU)



High Speed Rail (HSR)
-Conventional
-Maglev





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Bus Rapid Transit Alignments



Trips

Serves regional and local trips

Speed

Street-running (10-14 mph)
HOV (25-35 mph)
Speed constrained by peak period congestion

Station Spacing

1.0 mile between stations

Land Use Plans

Support for development/revitalization plans proven internationally (Canada, Australia)





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Rail Alternative Alignments



Trips	Serves regional and local trips
Alignment	Use RR ROW with temporal separation or provide 3 tracks
Speed	Provides a low to medium speed: 8.5 - 15 mph (Streetcar); 25-35 mph (LRT); 25-55 mph (DMU)
Station Spacing	0.2-0.5 miles between stops (Streetcar) 1-1.5 miles (LRT); 1.5-3.0 miles (DMU)
Land Use Plans	Demonstrated support for development/revitalization plans





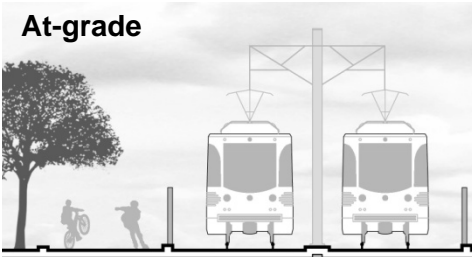

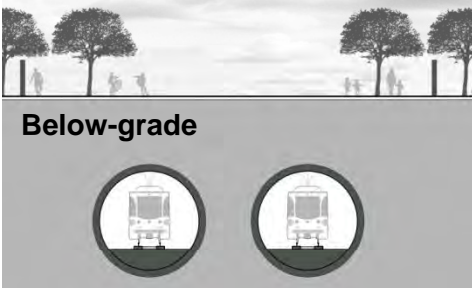
Trips	Serves regional trips
Alignment	Requires separate ROW for Northern Connection area
Speed	Provides high speed of 110-220 mph
Station Spacing	10-20 miles between stations
Land Use Plans	Demonstrated support for high density development nationally (Conventional) and internationally (Conventional & Maglev)





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Vertical Alignments

Alignment	BRT	Streetcar	Light Rail	Diesel Multiple Unit	High Speed Rail
At-grade 	✓	✓	✓	✓	—
Above-grade 	✓	✓	✓	✓	✓
Below-grade 	—	✓	✓	—	✓





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Initial Screening Criteria

Initial set of alternatives evaluated based on:

- Public and Stakeholder Input
- Mobility Improvements including ridership and travel speed
- Support for development/revitalization plans
- Environmental Impacts
- Engineering and Operating Viability

Public and Stakeholder Input

Input provided through:

Advisory committees

October/November/January

Community meetings

November/December

Elected Official/Stakeholder briefings

October-January

Public presentations

October-December

Public comments

October-December



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Conceptual Ridership

Range of possible Daily Boardings based on:

- Similar projects
- Proposed alignments and station spacing

	BRT	RAIL	HSR
Conceptual Ridership	19,200-32,400	26,000-57,600	2,400-4,800





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Conceptual Cost to Build

Order-of-Magnitude Construction Costs*

Union Station to Santa Ana Regional Transportation Center
(2010\$, billions)

	BRT	STCR	LRT	DMU	HSR	
					Conventional	Maglev
At-Grade	\$0.60	\$1.30	\$1.60	\$1.22	-	-
Above-Grade	\$2.18	\$3.95	\$4.21	\$4.11	\$4.91	\$5.94
Below-Grade	**	\$9.81	\$10.61	**	\$13.35	\$14.01

* These costs are conceptual order of magnitude estimates

** Typically not done due to ventilation issues





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Funding Sources

Possible Funding:

Los Angeles County
Measure R Funds *

\$649 million

Other Funding
(50 percent match from local,
regional, state, and federal)

+ \$649 funding

Projected Available Funding

\$1,298 billion

* LACMTA 2009 LRTP, escalated to year of expenditure (2027)





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Conceptual Cost To Operate and Ride

Annual Cost to Operate (\$2010)

	BRT	Street Car ²	LRT ¹	DMU	High Speed Rail ³
Cost Per Service Hour	\$80-120	\$140-150	\$160-250	\$250-300	\$2,500-3,000

Current/Forecast Fare

Fare Per One-Way Trip	\$1.50	\$2.05	\$1.50	\$2.00	\$50-55*
	Metro Orange Line	Portland, West Sacramento	Metro Gold Line	NCTD Sprinter	Amtrak Acela

¹ Metro Eastside Phase 2 Preliminary Operating Costs Technical Memorandum

² Portland Streetcar Operating & Maintenance Division

³ SCAG High Speed Regional Transportation Alternative Analysis, Alternative Analysis

Note: Operating Cost stated as being within 5% for Maglev & Steel Wheel HSR Systems

* Baltimore to Washington, DC





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Conceptual Cost Per Rider

Order-of-Magnitude Cost Per Rider*

Union Station to Santa Ana Regional Transportation Center
(2010\$)

Conceptual Annual Cost Per Rider	BRT	STCR	LRT	DMU	HSR	
					Conventional	Maglev
	\$20-50	\$10-40	\$10-50	\$10-50	\$460-920	\$580-1150

* These costs are conceptual order of magnitude estimates





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Environmental Concerns

Key environmental and community impacts identified by the public and stakeholders:

- Noise and Vibration
- Air Quality
- Visual and Privacy
- Traffic Impacts
- Property Acquisition





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Noise and Vibration Impacts

Average 24-hour Noise Exposure¹:

Noise (dBA)	Hwy 4 lanes	BRT ^{2,3}	STCR ³	LRT ³	DMU ³	HSR	
						Conventional	Maglev
	79	63/65	64	64	65	71	64

Source: FTA

¹ Represents conditions with no noise mitigation measures

² Represents electric/diesel buses.

³ Represents operation noise only; noise from bells, horns, and warning gates to be identified when more detailed design information is available. (Metro Gold Line = 67 – 76 dBA, Freight = 90 – 110 dBA)

Vibration Impacts:

Vibration Category	Hwy 4 lanes	BRT	STCR	LRT	DMU	HSR	
						Conventional	Maglev
	1	1	1/2	3	4/5	5	4/5

Source: FTA

1. Rubber tire systems

2. Lighter, smaller/weight steel-wheel vehicles; low operating speeds

3. Medium-sized/weight steel-wheel vehicles coupled together; medium speed

4. Heavier-weight, larger vehicles; faster operating speeds

5. Locomotive-operated systems; fastest operating speeds

Categories 3-5 may require vibration mitigation





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Air Quality

Air Quality Benefits

	No Build	BRT	STCR	LRT	DMU	HSR	
						Conventional	Maglev
Regional Emissions	Base	Yes	Yes ¹	Yes ¹	Yes/No ²	Yes ¹	Yes ¹
Local Emissions	Base	Yes ³	Yes	Yes	No	Yes	Yes
Carbon Monoxide	Base	Yes ³	Yes	Yes	No	Yes	Yes
Toxics	Base	Yes ³	Yes	Yes	No	Yes	Yes
Greenhouse Gases	Base	Yes	Yes	Yes	Yes	Yes	Yes

¹ Assumes electrical power meets California Renewables Portfolio Standard (RPS).

² Provides benefits over No Build conditions, minor increase in regional emissions from clean diesel operations

³ Assumes buses run on natural gas or other alternative fuel, rather than diesel.





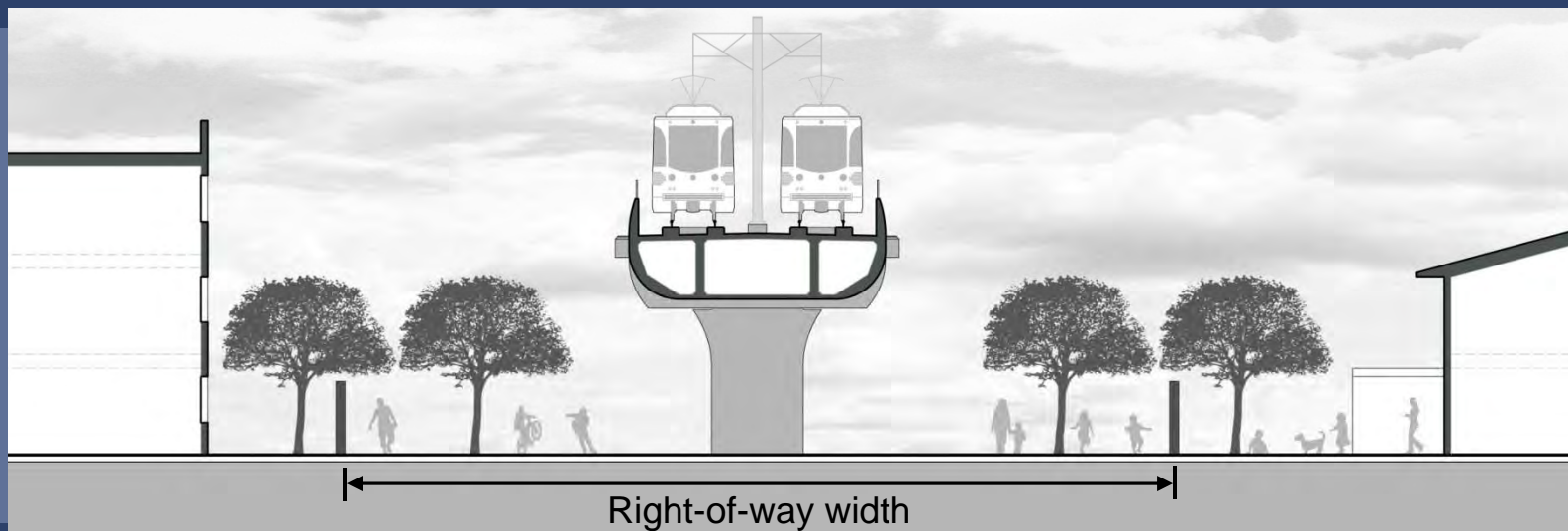
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Visual and Privacy

At-Grade



Above-Grade





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Traffic Impacts

Summary of possible traffic impacts:

- At-grade operational impacts include:
 - Traffic signal cycle changes
 - Queuing and capacity impacts
 - On-street parking impacts
 - Bikeway and pedestrian safety
- Above-grade operational impacts due to columns:
 - Visual and safety impacts
 - Capacity, left turn lanes, and parking impacts
- Unique diagonal street crossings will increase traffic impacts





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Property Acquisition

Acquisition may be required for:

- Stations, bus/shuttle transfer, parking, and other facilities
- Alignment/System requirements

Possible Acquisition (parcels) Along PE ROW from Metro Green Line to Santa Ana RTC

BRT	STCR	LRT	DMU	HSR	
				Conventional	Maglev
—	—	Less than 10	Less than 10	More than 100	More than 100

Acquisition requirements from Metro Green Line north to Downtown Los Angeles to be identified in next study phase





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Northern Connection Challenges



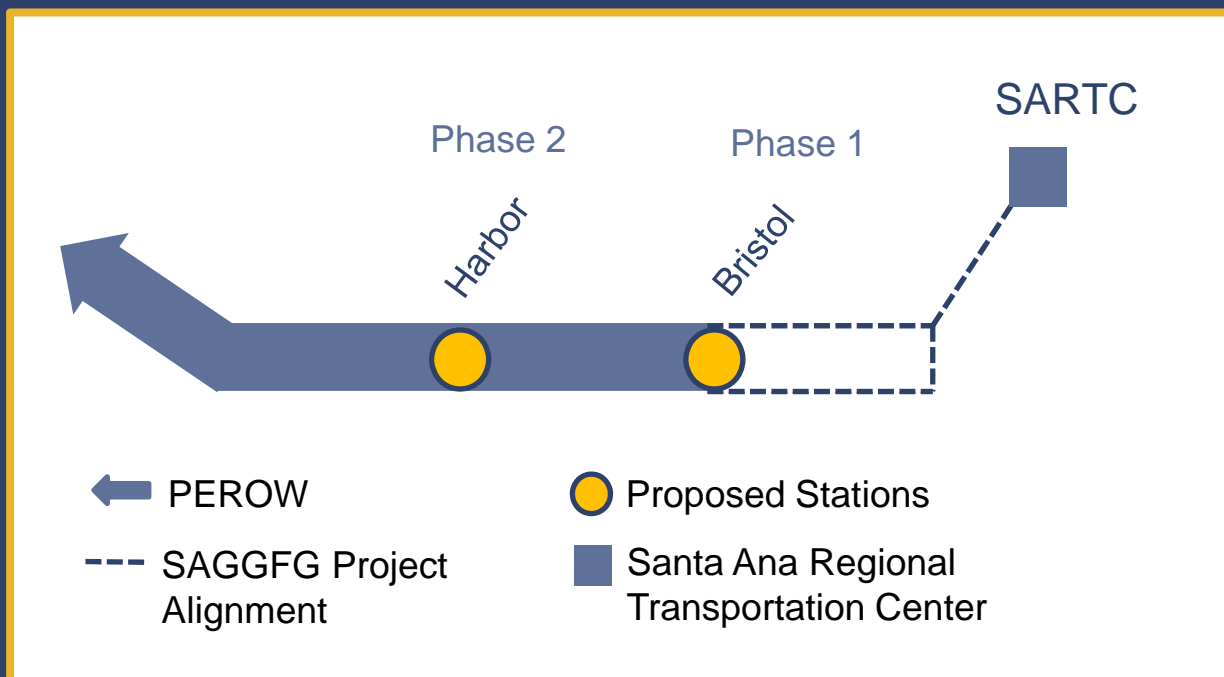
- Compatibility with:
 - Freight rail operations
 - Metrolink and CAHST service
 - Metro Green Line
- Multiple approving/cooperating agencies
- Limited track capacity from UPRR/Metrolink tracks into Union Station
- Fit with city street operations with high truck volumes





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Southern Connection Challenges



SAGGFG Project Schedule

Complete	Date
Evaluation of Final Alternatives	Spring 2011
Draft Environmental Document	Summer 2011
Preliminary Engineering	Spring 2012
Phase I Construction	Winter 2014/ Spring 2015
Phase II Construction	Fall 2020

Fit with Santa Ana-Garden Grove Fixed Guideway Project:

- Study and implementation timeframe
- Fit with planned modes





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Operating Viability

Operating Assessment

	BRT	STCR	LRT	DMU	HSR	
					Conventional	Maglev
Metro/OCTA System Fit	✓	*	✓	No existing entity		No existing entity
CAHST System Fit					✓	No
Domestic Revenue Service	✓	✓	✓	✓	✓	Not yet
Can meet Federal “Buy America” Requirements	✓	✓	✓	✓	✓	Not yet

* May fit with future SAGGFG project operations





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Initial Screening Summary

	BRT	STCR	LRT	DMU	HSR	
					Conventional	Maglev
Serves: Local trips	✓	✓	✓	✓		
Regional trips	✓		✓	✓	✓	✓
Provides support for local plans	*	✓	✓	*	*	*
Requires Acquisition	Minimal	Minimal	Minor	Minor	Major	Major
Has Air Quality Benefits	Yes	Yes	Yes	No**	Yes	Yes
Fit with current system plans	✓	✓	✓	No	No	No
Has State and Federal approved vehicles/system	✓	✓	✓	✓	✓	Not Yet
Conceptual Ridership	19,200-32,400	26,000-39,000	26,000-57,600	26,000 - 57,600	2,400-4,800	2,400-4,800
Conceptual Cost to Build (\$2010, billions)	\$0.6-2.2	\$1.3-4.0	\$1.6-4.2	\$1.2-4.1	\$4.9	\$5.9
Conceptual Annual Cost Per Rider	\$20-50	\$10-40	\$10-50	\$10-50	\$460-920	\$580-1,150

* Proven nationally and internationally

** Some regional benefits





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Final Set of Alternatives

In January, 2 alternatives identified for further study based on:

- Meets Project Purpose and Need
- Appears viable from cost/ridership, funding, engineering, operating and environmental perspective
- Has public/stakeholder support (meets local goals)





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Listening to You

Building our future through our choices today – Please share your thoughts and ideas with us.

Find your group assignment on your nametag.

BOB

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Ground Rules for Breakout Sessions

- Only one person to speak at a time. . . *everyone participates.*
- Listen for understanding. . . *not for response.*
- Suspend snap judgments. . . *try on other's ideas for size; however, agree to disagree.*
- Stay on the timeline; keep comments concise, avoid repetition. . *avoid war stories or soapboxes.*
- Each member of the group is equal, all comments matter. . . *share the airtime.*





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Next Steps

Community Meetings

**November 2010
December 2010**

**Technical Advisory Committee
Discussion**

January 2011

**Steering Committee
Recommendation
On Final set of Alternatives**

January 2011



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Contact Us

Thank you for your participation! Please continue to share your thoughts and ideas by:

- **Mail** – Philip Law, Project Manager, SCAG, 818 W. 7th Street, 12th Floor, Los Angeles, CA 90017
- **Call** – 213.236.1842
- **Email** – law@scag.ca.gov
- **Project website** – www.pacificelectriccorridor.com
- **Facebook** – search SCAG

